

of the fuel pump mounting boss 29e extends to the bearing 29a of the integral type camshaft holder 29, the effect of enhancing the rigidity can be further increased.

Although an embodiment of the present invention has been explained in detail above, the present invention can be modified in a variety of ways without departing from the spirit and scope of the present invention.

For example, the present invention can also be applied to an engine having no variable valve operating characteristic mechanism V and to an in-line engine or a V-type engine other than a four cylinder type. Furthermore, a DOHC type engine has been illustrated in the present embodiment, but the present invention can be applied to an SOHC type engine.

Furthermore, the rocker shafts 31 and 32 are supported in the rocker shaft holder 28 and the camshafts 33 and 34 are supported between the rocker shaft holder 28 and the integral type camshaft holder 29 in the embodiment, but while supporting the rocker shafts 31 and 32 in the rocker shaft holder 28, the camshafts 33 and 34 can be supported in the integral type camshaft holder 29, or the rocker shafts 31 and 32 can be supported between the rocker shaft holder 28 and the integral type camshaft holder 29 while supporting the camshafts 33 and 34 in the integral type camshaft holder 29. Moreover, although the fuel pump 41 is driven by the exhaust camshaft 34 in the embodiment, it can be driven by the intake camshaft 33.

WHAT IS CLAIMED IS:

1. An engine fuel pump mounting structure for an engine having a camshaft supported on an upper surface of a cylinder head, and a fuel pump which is driven by said camshaft, said mounting structure comprising:

a plurality of bearings operative to support said camshaft,

connecting parts operative to connect said bearings together to form a camshaft holder, and fastening means for attaching said fuel pump to an end of said camshaft holder.

2. The engine fuel pump mounting structure according to Claim 1 wherein a fuel pump mounting boss is formed on the cylinder head and an outer wall of an EGR gas passage is formed in the cylinder head, said fuel pump mounting boss and said outer wall of said EGR gas passage being connected to each other via a reinforcing rib.

3. The engine fuel pump mounting structure according to Claim 2 wherein said fuel pump mounting boss is formed on the camshaft holder, and a reinforcing rib is provided on a reverse surface of said fuel pump mounting boss extending in a direction toward said fuel pump.

4. The engine fuel pump mounting structure according to Claim 1 wherein said fuel pump mounting boss is formed on the camshaft holder, and a reinforcing rib is provided on a reverse surface of said fuel pump mounting boss extending in a direction toward said fuel pump.

5. An engine fuel pump mounting structure in which a rocker shaft holder that supports a rocker shaft and a camshaft holder that supports a camshaft alone or in association with the rocker shaft holder are superimposed on an upper surface of a cylinder head, and a fuel pump is mounted on a shaft end of the camshaft, said engine fuel pump mounting structure comprising:

a plurality of bearings that support the camshaft being integrally connected together via connecting parts to form the camshaft holder, and the fuel pump being fastened to each of the cylinder head, the rocker shaft holder and the camshaft holder by bolts.

6. The engine fuel pump mounting structure according to Claim 5 wherein a fuel pump mounting boss is formed on the cylinder head and an outer wall of an EGR gas passage is formed in the cylinder head, and a reinforcing rib connects said fuel pump mounting boss and said outer wall of said EGR gas passage to each other.

7. The engine fuel pump mounting structure according to Claim 6 wherein said fuel pump mounting boss is formed on the camshaft holder, and a reinforcing rib is provided on a reverse surface of said fuel pump mounting boss extending in a direction toward said fuel pump.

8. The engine fuel pump mounting structure according to Claim 5 wherein said fuel pump mounting boss is formed on the camshaft holder, and a reinforcing rib is provided on a reverse surface of said fuel pump mounting boss extending in a direction toward said fuel pump.

9. An engine fuel pump mounting structure, comprising:

a cylinder head,

a camshaft holder fixed to an upper surface of said cylinder head,

a camshaft supported by said camshaft holder, and

a fuel pump mounted on an end of said camshaft,

said engine fuel pump mounting structure further including:

a bearing provided on the camshaft holder, a fuel pump mounting boss provided on the camshaft holder, and a reinforcing rib connecting said bearing and said fuel pump mounting boss to each other.

10. The engine fuel pump mounting structure according to Claim 9 including a fuel pump mounting boss formed on the cylinder head, an outer wall of an EGR gas passage formed in the cylinder head, and a reinforcing rib connecting said fuel pump mounting boss and said outer wall of said EGR gas passage to each other.

11. The engine fuel pump mounting structure according to Claim 10 wherein the reinforcing rib connects the bearing of the camshaft holder to the fuel pump mounting boss and extends from the reverse side of the fuel pump mounting boss in the direction toward the fuel pump.

12. The engine fuel pump mounting structure according to Claim 9 wherein the reinforcing rib connects the bearing of the camshaft holder to the fuel pump mounting boss and extends from a reverse side of the fuel pump mounting boss in the direction toward the fuel pump.